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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,553	12/05/2001	William S. Cadden	POU920010167US1	7220

7590 02/23/2005

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EXAMINER
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LAO, SUE X

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/004,553

Applicant(s)

CADDEN ET AL.

Examiner

Sue Lao

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 15-22 and 27 is/are rejected.
- 7) ☒ Claim(s) 11-14 and 23-26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-27 are presented for examination.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obermarck et al (U S Pat. 4,847,754).

As to claim 1, Obermarck teaches a method (obligation passing) for handling events (access resource status variable RSV) in a data processing system (multiprocessing environment) in which at least two processes (competing processes) access the same data (shared resource / RSV), said method comprising the step of handing off the task of accessing said data (pass the obligation to complete execution against the RSV) from a first event handler process (any process using the resource) to a second event handler process (completing process) that is already accessing said data. See col. 4, lines 10-51, fig. 1.

Obermarck does not teach that the processes are implemented by respective threads. However, it is well known in the art that a process can be implemented in the form of either a heavy-weight process (conventional process) or a light-weight process (thread). Therefore, it would have been obvious to implement each of the competing processes/handlers of Obermarck by a corresponding thread (a light-weight process).

As to claim 2, Obermarck teaches a compare and swap function (compare and swap and compare double and swap instructions) is used to insure that data that is written between threads/processes is not lost when more than one thread/process attempts to write to a variable at the same time (atomic operations). See col. 4, lines 10-51; col. 6, line 65 – col. 7, line 6; fig. 1.

As to claim 27, Obermarck teaches a method (obligation passing) for handling events (access to shared resource) in a multiprocessing data processing system (multiprocessing environment) which comprises the step of insuring that only one process gains control at a time (serializing access) so that a first process (competing process), which has an event that needs to be handled at the time that a second process (completing process) is handling said event, passes the handling of the events from the first process to the second process (pass the obligation to complete execution against the RSV), whereby the first process does not need to wait for the second process to finish (step exit, fig. 1) and whereby no process waits for a significant amount of time for another process to finish (without delaying a process while another process uses the resource). See col. 4, lines 10-51, fig. 1.

Obermarck does not teach that the processes are implemented by respective threads. However, it is well known in the art that a process can be implemented in the form of either a heavy-weight process (conventional process) or a light-weight process (thread). Therefore, it would have been obvious to implement each of the competing processes/handlers of Obermarck by a corresponding thread (a light-weight process). When the teaching of Obermarck is modified as such, the multiprocessing data processing system would have been implemented by a multithreaded data processing system.

5. Claims 3-10, 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obermarck et al as applied to claim 1 in view of TDB (IBM TDB, "Compare and Swap Implementation of Task Logic").

As to claim 3, TDB teaches a bit array (work request bits or queues, event control block ECB used with compare and swap implementation of task logic) is updated by the compare and swap function (compare and swap implementation) so as to contain a list of events (work on appropriate queue) to be handled by the thread/process that is currently handling events. See pages 2-3.

Given the teaching of TDB, it would have been obvious to include a bit array updated by the compare and swap function into Obermarck. One of ordinary skill in the art would have been motivated to combine the teachings of Obermarck and TDB because this would have reduced the overhead of task switching (TDB, page 1, 2<sup>nd</sup> para.).

As to claims 4-6, Obermarck as modified by TDB teaches (TDB) an indicator which signifies various combinations of status of events and task (two switches denoting "task running/not\_running" and "more work to do / no more work to do" (page 3). The combinations of the two bits provide/make obvious the combinations of events/work and threads/tasks as claimed. Obermarck as modified by TDB also teaches (TDB) changes the bits (mark the status bits, turn on work bits, page 3). Note discussion of claim 3 for a motivation to combine.

As to claims 7-10, Obermarck as modified by TDB teaches (TDB) change the combination of the bits, as discussed on claims 4-6. Obermarck as modified by TDB teaches (TDB) further teaches termination (terminate) and repeated attempts (if swap fails, go to step 1). See page 3. Note discussion of claim 3 for a motivation to combine.

As to claim 15, TDB teaches a list of events (appropriate queue) is updated by the compare and swap function (compare and swap implementation of task logic) to contain a list of events to be handled by the thread/process that is currently handling events (queue the work on appropriate queue). See pages 2-3. Note discussion of claim 3 for a motivation to combine.

As to claims 16-22, note discussions of claims 3, 5-10, respectively.

6. Claims 11-14, 23-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (571) 272-3764. A voice mail service is also available at this number. The examiner's supervisor, SPE Meng-Ai An, can be reached on (571) 272 3756. The examiner can normally be reached on Monday - Friday, from 9AM to 5PM. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 18, 2005



**SUE LAO**  
**PRIMARY EXAMINER**